

What is Your Degree Worth? The Relationship Between Post-Secondary Programs and Employment Outcomes

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Abstract

There is a long-standing debate over the value of certain postsecondary programs in facilitating employment after graduation. The National Graduate Survey (2005) was used to examine how graduates of various programs differ in their pursuits of higher education, employment status, job-program relatedness and job qualifications. Results suggest that graduates from humanities are more likely to pursue higher education, are less likely to be employed full time, are more likely to have jobs unrelated to their program, and are more likely to be overqualified for their jobs. These findings highlight that humanities programs may not provide the knowledge and skills that are in current economic demand.

Résumé

En ce qui a trait à la facilité d'emploi après les études, l'utilité de certains programmes d'enseignement postsecondaire fait l'objet de débats depuis longtemps. En effet, l'Enquête nationale auprès des diplômés (2005) visait à déterminer la différence entre les diplômés de divers programmes quant à la poursuite de leur cheminement vers des études supérieures, quant à leur statut d'emploi, quant au lien entre leur programme d'études et l'emploi occupé, et quant à leurs qualifications professionnelles. Les résultats indiquaient que les diplômés en lettres et sciences humaines étaient plus enclins à poursuivre des études supérieures, moins susceptibles d'être employés à temps plein, plus portés

à occuper un emploi sans lien avec leur programme et plus susceptibles d'être surqualifiés pour leur emploi. Ces constatations indiquent que les programmes de lettres et sciences humaines ne fournissent peut-être pas les connaissances et les compétences recherchées dans le contexte économique actuel.

Pursuing a postsecondary degree is similar to purchasing stocks—it is an investment intended to provide future benefits. More than 80% of high school graduates pursue postsecondary education to increase employment opportunities and income (King, Warren, Boyer, & Chin, 2002; Richards, 1984). University graduates earn two to three times more than high school graduates and experience higher employment rates over the course of their careers (U.S. Bureau of Labour Statistics, 1997; Lacey & Crosby, 2005; U.S. Census Bureau, 2002). However, not all postsecondary degrees, and therefore postsecondary programs, are created equal. Some programs offer a high return on investment and promote employment opportunities and greater earnings. Other programs may provide a poor return on investment and lead to unrelated and overqualified employment outcomes. Evidence for this comes from research showing that 35.1% of graduates are in a job that is not closely related to their education (Boudarbat & Chernoff, 2009). Of greater importance, educational characteristics of particular programs—rather than demographic and socioeconomic characteristics (e.g., gender and family background)—predict the highest likelihood of employment is related to a graduate's field of study.

Graduates aim to find employment related to their program. For example, a humanities graduate will often seek employment as a manager or as an assistant in marketing, human resources, or public relations (Study.com, 2014), whereas a social science graduate is likely to be employed in a legal office, child and youth centre, or detention centre. Prior to graduation, students have significant knowledge about occupations and wages related to their program; however, they often underestimate employment opportunities related to other programs (Betts, 1996) and earn significantly more in jobs related to their program than in jobs not related to their program (Robst, 2007). An important indicator of labour market success is the ability to use the investment in education in future employment. Thus, the choice of program reflects an investment in skills necessary to obtain employment related to that program. However, the knowledge and skills offered by different programs are not equally marketable in today's workforce.

The current employment market values skills and knowledge that can be applied to domain-specific skills (Allen, 1998; Giles & Drewes, 2001; Robst, 2007). Research experience, (e.g., lab and field work), internships, computer and technology knowledge, persuasion and argumentative abilities, and knowledge of negotiation techniques are all skills that can be applied to specific domains, such as engineering, business, science, and some programs in social science (e.g., psychology, economics, geography). In contrast, domain-general skills, such as critical and analytical skills, are not tailored to specific fields of employment. Programs that promote domain-specific skills and practical knowledge increase opportunities for job-related employment to a greater extent than programs promoting the acquisition of domain-general skills and theoretical knowledge. Walters (2004) demonstrated that employers request specific postsecondary credentials for jobs, and showed a strong connection for occupationally specific disciplines, but not for general ones. In other words, employers sought out employees who had occupationally relevant skills acquired in university, rather than general skills.

There is a long-standing debate over the ability of certain programs to promote post-graduation employment in related fields. Popular media, such as the *Huffington Post* (Hoolihan, 2011) and Britain's *Daily Mail Online* (Barrow, 2011) have deemed humanities-based programs (e.g., history, philosophy, religion) as inept at promoting related employment. Empirical research supports these claims by demonstrating that humanities graduates are more likely to have difficulty finding related employment compared to science, engineering, business, nursing, and education graduates (Lacey & Crosby, 2005; Richards, 1984; Robst, 2007; Sharp, 1970; Sharp & Weidman, 1986). As a consequence, uncertainty in future income and job stability may also pressure humanities graduates to pursue higher education or additional training to increase their employment and income prospects (Kodde, 1986).

A potential explanation for why humanities programs are less likely to produce employment in related fields is that they provide generic skills and focus on theoretical knowledge. Although such programs help students develop critical and analytical thinking skills, they do not provide the domain-specific, practical skills that can be applied to particular occupations (Giles & Drewes, 2001; Robst, 2007). However, science, engineering, business, and education programs provide a close association between the skills taught (e.g., negotiation and persuasion strategies, lab and field experience) and the skills needed in specific occupations.

Some argue it is important that humanities graduates be aware they may need to seek additional job-specific skills, or on-the-job training because their programs only provide generic skills. However, this argument loses credibility when held up against the abundant research supporting the claim that students select university programs with the intention of applying their newly acquired knowledge and skills to related occupations (Betts, 1996; Robst, 2007). Indeed, since the most important indicator of labour market success is the ability to use the investment in education in future employment, it would seem unlikely that students would enter humanities and not want to harness their educational experience to promote future employment in related domains.

Although empirical evidence exists demonstrating that humanities graduates are less likely to find related employment compared to other graduates, most research has been conducted on graduates from American or European universities (Hartog, 2000; Lacey & Crosby, 2005; Richards, 1984; Robst, 2007), or on small groups (e.g., single universities, specific cities) (Richards, 1984; Robst, 2007). In addition, most studies only provide data from early to mid-1990s, which may not reflect the current relationship between university programs and employment (Allen, 1998; Giles & Drewes, 2001; Lacey & Crosby, 2005; Richards, 1984; Robst, 2007). Furthermore, most previous research within Canada has focused on issues of overqualification, rather than on the specific relationship between postsecondarys and postgraduation employment in related fields (Frenette, 2000; Yeun, 2010).

The study described in this article expands on previous research by examining the impact of university bachelor programs on postgraduation employment outcomes and higher education pursuits across Canada in 2007. Our study examines how postsecondary programs impact employment status outcomes (full time, part time, unemployed), plans to pursue higher education (Master's, PhD), and program-related job outcomes of graduates from domain-general programs (e.g., humanities) compared to graduates from domain-specific programs (social science, business, science, education, math and computer sci-

ence, engineering and technology). This study also examines whether certain programs are more at risk for producing overqualified workers. Previous work has been inadequate at addressing the issue of overqualification from the perspective of different program influences. Our findings have important practical implications that highlight meaningful relationships between programs and employment after graduation. The results also help identify programs that put students at risk for experiencing employment difficulties, both in terms of job relatedness and overqualification, and the results can help suggest constructive changes in educational and social policies. Important changes may need to ensure that educational institutions inform both university-bound students and their parents of the different employment outcomes associated with various university programs.

Our study had two research objectives:

1. To examine postgraduation activities of graduates, specifically (a) whether humanities graduates are more likely to pursue higher education (Master's and/or PhD. compared to graduates from other programs, and (b) whether humanities graduates are more likely to be employed part time rather than full time or will be unemployed (not applicable) compared to graduates from other programs.
2. To examine the employment experiences of graduates, specifically (a) whether humanities graduates are less likely to find employment related to their program compared to graduates from other programs, and (b) whether humanities graduates are more likely to be overqualified for their jobs compared to graduates from other programs.

We hypothesized that graduates from nonhumanities-based programs would be less likely to plan on pursuing higher education, and would be less likely to be unemployed or employed part time (rather than full time), compared to graduates from humanities. The unemployed (not applicable) category was exploratory in nature and was used to assess whether other programs compared to humanities produced fewer unemployed graduates compared to full-time employed graduates. In addition, we hypothesized that graduates from humanities would have fewer jobs in fields they perceived as related to their program, and would be more overqualified for their current jobs compared to graduates from nonhumanities-based programs. These hypotheses were based on the rationale that humanities programs are more likely to provide generic skills that are not in economic demand and that they encourage higher education pursuits to increase employment prospects. In contrast, nonhumanities-based programs are more likely to provide specialized skills that are applicable to specific occupations and are increasingly valued in the current job market (Lacey & Crosby, 2005; Richards, 1984; Robst, 2007; Sharp, 1970; Sharp & Weidman, 1986).

Method

This study involved secondary data analyses using the National Graduate Survey (NGS, 2005) conducted in 2007 under the protection of the Statistics Canada Act, and used computer-assisted telephone interviews. The overall response rate for NGS survey was 68% ($N = 39,588$) (Yeun, 2010), which was deemed appropriate based on previous findings demonstrating average response rates for behavioural science research are 55.6% (Baruch, 1999). The objective of the NGS was to assess the educational and employment experiences of Canadian postsecondary school graduates living in Canada or the United States two years after their graduation. The survey used a stratified, two-stage, simple

random-sample design to select graduates in the 2005 calendar year from lists provided by selected postsecondary institutions. Three variables were used for stratification: geographical location of institution, level of education, and program of study.

There were 13 geographical locations that comprised NGS: the ten provinces and the three northern territories. There were five levels of education: trade/vocational certificate or diploma, college diploma, bachelor's degree, master's degree, and doctorate. There were twelve programs of study aggregated based on primary groups of the Classification of Instructional Programs (CIP):

1. personal improvement and leisure programs
2. education
3. visual and performing arts and communications technologies
4. humanities
5. social and behavioural sciences and law (social sciences)
6. business, management and public administration (business)
7. physical and life sciences and technologies (sciences)
8. mathematics, computer and information sciences
9. architecture, engineering, and related technologies
10. agriculture, natural resources and conservation
11. health, parks, recreation and fitness
12. personal, protective and transportation services.

Postsecondary program (independent variable)

This variable was an open-ended question and served as the independent variable for all analyses reported in this paper. Respondents were asked to indicate the main program for their bachelor's degree. Of the twelve aggregated CIP categories, only seven were used: humanities, social science, business, science, education, math and computer science, and engineering and technology. The rationale for only including these programs was to ensure programs were offered to students in all universities, that students were not offered co-op placements (as vocational programs that specifically teach practical rather than theoretical skill sets do), and that curricular structure was similar across universities. For all analyses, humanities, the largest group in our sample, was used as the reference category. Dummy codes were created for each program other than for humanities, with 1 indicating a respondent's presence in a program, and 0 indicating a respondent's absence from a program.

Covariates (control variables)

Several covariates were included in all analyses to remove the effects of respondent characteristics on the estimation of program effects. These variables have been shown to influence job-education match in similar studies (Garcia-Espejo & Ibanez, 2006; Krahn & Bowlby, 1999; Robst, 2007; Storen & Arnesen, 2006; Wolbers, 2003; Witte & Kalleberg, 1995). The variables were age, gender, marital status, dependent children, mother's education level (index of socioeconomic status), father's education level (index of socioeconomic status), and co-op program participation. Gender coding was males, 0; females 1. Marital status coding was single, common law, or divorced, 0; married, 1. Dependent children coding was respondents without dependent children, 0; respondents

with dependent children, 1. Both measures of parental education coding was high school or below, 0; above high school, 1. Finally, co-operative (co-op) participation measured whether respondents participated in co-op opportunities during their bachelor's degree, and was coded no, 0; yes, 1.

Sample for Analysis

Research objective 1. Our first research objective was (a) to examine whether graduates from humanities are more likely to pursue higher education compared to graduates from other programs, and (b) to examine whether graduates from humanities are more likely to be employed part time rather than full time or be unemployed (not applicable) compared to graduates from other programs. To be eligible for the analysis, respondents had to report no physical or mental disability preventing them from school or work activities; they had to be graduates with only one university degree (bachelor's) within Canada; and they had to have high school as their other highest level of education. Additionally, respondents had to be graduates from humanities, social science, business, science, education, math and computer science, or engineering and technology programs. Respondents who met the selection criteria but who refused to answer one or more questions of interest were removed from the analyses; these respondents made up less than 1% ($n = 13$) of our sample. The final sample size after all selection criteria were met was $N = 1,622$.

Research objective 2. Our second research objective was (a) to examine whether graduates from humanities are less likely to find employment related to their program compared to graduates from other programs, and (b) to examine whether graduates from humanities are more likely to be overqualified for their jobs compared to graduates from other programs. These respondents had to meet the same selection criteria as the research objective 1, with the additional constraint that they had to be employed (either part time or full time) at the time the interview was administered. As a result, research objective 2 is a subset of the research objective 1's sample; there were 404 respondents not employed at the time of the interview, and therefore removed from the analyses (these were respondents from the "not applicable" category from research objective 1. In addition, there were 26 respondents who were categorized as "valid skips" for the question that addressed job relatedness because they were unpaid workers; we removed these respondents from our analyses because they could not provide meaningful data (i.e., link between postsecondary program and job relatedness). However, they only made up 2% of our sample, and should not have affected our results. Eighty-four respondents who were "underqualified" for their current job were removed from the analyses, because they were not a focus of interest for our study and were too small in numbers to model reliably. The final sample size for our second research objective was $N = 1,108$.

Concepts and Measures

Research objective 1. Two dependent variables were used to examine the relationship between programs and postgraduation activities.

Plans to pursue higher education. Respondents were asked to indicate whether they planned on pursuing a Master's and/or PhD degrees. We combined the two questions to represent the outcome stream of planning to pursue higher education. The stem questions read, "Do you plan to pursue a Master's degree?" and "Do you plan to pursue a PhD?"

Response options for both questions were yes, no, and don't know. A binary variable was constructed to code for plans of pursuing higher education: 0, no or don't know; 1, yes.

Employment status. Respondents were asked to indicate whether they were employed full time or part time at the job they held the week prior to the interview. The stem question read, "Were you working full time or part time?" The response options were employed full time, employed part time, and not applicable. The not applicable respondents ($n = 404$) were comprised of unemployed respondents enrolled in courses at an institution ($n = 218$), and unemployed respondents not enrolled in courses at an institution ($n = 186$) at the time the survey was administered. A three-option variable was constructed to code employment status: 0, part time; 1, full time; 2, not applicable (unemployed respondents either enrolled in courses or not enrolled in courses).

Research objective 2. Two dependent variables were used to examine the relationship between postsecondary program, subsequent employment related to their program and appropriate job qualification.

Relatedness of program and job. Respondents were asked to indicate how closely their current job was related to their program. The stem question read, "How closely is the (main) job you held last week related to your certificate, diploma or degree?" The response options were closely related, somewhat related, and not related at all. A three-option variable was constructed to code job relatedness: 0, not related at all; 1, somewhat related; 2, closely related.

Job qualification. Respondents were asked to indicate how qualified they were for their current job. The stem question read, "What is the completed level of education required to get last week's job, compared with the highest level of education of the graduate by 2005?" The response options were, (1) No education requirements specified, (2) More than required, (3) Same as required, and (4) Less than required. Option 1 suggested that jobs requiring a specified bachelor's degree may recruit overqualified employees. Since our selected respondents had a bachelor's degree, we assumed that respondents who chose option 1 were overqualified for their job. By that logic, options 1 and 2 were combined to represent "overqualification," and option 3 represented "appropriate qualification." A binary variable was constructed to code job qualification: 0, appropriately qualified; 1, overqualified.

Analysis

Four logistic regression models were used to compute odd ratios for the research objectives. All analyses were conducted in SPSS 19 PASW software.

Research objective 1. Logistic regression was used to compute odds ratios between plans to pursue higher education (0, no or don't know; 1, yes) as a function of each program type relative to humanities. Multinomial logistic regression was used to model the strength of association (odds ratio) between employment status (0, part time; 1, full time; 2, not applicable) and each program type, relative to humanities.

Research objective 2. Multinomial logistic regression was used to compute odds ratios between job relatedness (0, not at all related; 1, somewhat related; 2, closely related) as a function of each program type relative to humanities. Logistic regression was used to compute odds ratio of degree of qualification (0, appropriately qualified; 1, overqualified) as a function of each program type, relative to humanities.

Results

Table 1 provides a summary of sample characteristics for both research objectives. About 60% of the sample was female with the largest percentage of respondents coming from the humanities.

Table 1.
Sample characteristics of all graduates

Variables	Sample 1 N = 1622 %	Sample 2 N = 1108 %
Female respondent	61.34	62.50
Age mean (SD)	25.46 (8.48)	25.05 (7.59)
Father's education \geq high school	56.20	54.70
Mother's education \geq high school	59.40	59.70
Attended co-op program	9.90	9.70
Married	10.60	9.70
Have dependent children	5.80	4.30
Post-secondary programs		
Humanities	30.50	32.60
Education	5.50	5.20
Social Science	17.40	18.60
Business	12.30	11.90
Science	15.90	14.90
Math & Computer Science	9.30	8.60
Engineering & Technology	9.00	8.20
Plan on pursuing higher education	48.00	
Employment		
Part-time employment status	20.80	
Unemployment	24.90	
• enrolled in courses	53.96	
• not enrolled in courses	46.04	
Job somewhat related to program		21.30
Job closely related to program		37.60
Overqualified for current job		68.80

Note. Sample 1 was used to examine postgraduation activities of graduates (i.e., research objective 1) and Sample 2 was used to examine the employment experiences of graduates (i.e., research objective 2).

Our first objective was to examine whether graduates from humanities, compared to graduates from other programs, differ in their postgraduation activities, namely plans to pursue higher education and employment status (see Table 2 for a summary of the results). Results suggest that graduates from all programs except education (nonsignificant) were less likely to plan on pursuing higher education. When compared to humanities the odds of planning to pursue higher education decreased by 35% for social science, 55% for business, 50% for science, 42% for math and computer science, and 61% for engineering and technology. Results for employment status as a function of program suggest that in relation to full-time work, graduates from science, and engineering and technology programs were significantly less likely to be employed part time, compared to graduates from humanities; compared to humanities the odds of being employed part time compared to full time decreased by 39% for science and 59% for engineering and technology. There were no statistically significant differences for the other programs (education, social science, business, and math and computer sciences) compared to humanities. Graduates from all programs were also equally likely to be unemployed or enrolled in courses (no statistically significant differences). We used crosstabs to determine the distribution of the "not applicable" category. This was done by separating the unemployed respondents across the seven postsecondary programs by those who were not enrolled in courses (46%) and those who were enrolled in courses (54%). Moreover, humanities graduates (35%) were more likely to be unemployed compared to all other programs (less than 17%). Humanities graduates (25%) were also more likely to be enrolled in courses compared to all other programs (less than 18%).

Our second objective was to examine whether graduates from humanities, compared to other programs, differ in their employment experiences, namely job relatedness and job qualification (see Table 3 for a summary of the results). Results suggest that compared with the humanities, graduates from all of the other programs were significantly more likely to report having a job closely or somewhat related to their program. These associations were particularly strong for education, math and computer science, and engineering and technology. Compared to humanities, the odds of having a closely related job increased by 363% for education, 50% for social science, 101% for business, 111% for science, 352% for math and computer science, and 447% for engineering and technology. In addition, compared to humanities, the odds of having a somewhat-related job increased by 66% for social science, 254% for business, 74% for science, 114% for math and computer science, and 192% for engineering and technology. Graduates from education, science, and math and computer science programs were also less likely to report being overqualified for their jobs compared to graduates from humanities; compared to humanities, the odds of being overqualified decreased by 50% for education, 38% for science, and 65% for math and computer science. There were no statistically significant differences for graduates from social science, business, and engineering and technology programs compared to the humanities.

Table 2.

Odds ratios and 95% confidence intervals for postgraduation activities (plans to pursue higher education, and employment status) as a function of postsecondary program

	Education	Employment status	
	Plans to pursue higher education	Part time	Unemployed
	Odds Ratio (CI)	Odds Ratio (CI)	Odds Ratio (CI)
Constant/Intercept	0.91	1.28**	-1.35**
Study variables			
Postsecondary program			
Education	0.70 (0.44–1.11)	1.17 (0.68–2.01)	0.71 (0.38–1.30)
Social Science	0.65** (0.48–0.87)	1.09 (0.76–1.56)	0.85 (0.58–1.24)
Business	0.45** (0.32–0.63)	0.84 (0.55–1.30)	0.97 (0.64–1.47)
Science	0.50** (0.37–0.68)	0.61* (0.40–0.93)	1.24 (0.87–1.77)
Math & Computer Science	0.58** (0.40–0.85)	0.71 (0.42–1.19)	1.12 (0.72–1.76)
Engineering & Technology	0.39** (0.26–0.59)	0.41** (0.22–0.77)	1.03 (0.65–1.63)
Covariates			
Female respondent	1.30* (1.04–1.62)	1.66** (1.24–2.22)	1.36* (1.04–1.77)
Age (years)	1.00 (0.99–1.02)	1.00 (0.99–1.02)	1.01 (0.99–1.03)
Father's education \geq high school	1.02 (0.94–1.11)	1.02 (0.91–1.13)	1.09 (0.98–1.20)
Mother's education \geq high school	1.13** (1.04–1.23)	1.04 (0.94–1.16)	0.98 (0.88–1.08)
Attended co-op program	1.02 (0.72–1.43)	1.15 (0.74–1.78)	1.09 (0.72–1.64)
Married	0.77 (0.54–1.11)	1.18 (0.75–1.84)	1.00 (0.65–1.54)
Have dependent children	1.00 (0.63–1.62)	0.74 (0.39–1.41)	1.76* (1.03–3.00)

Note. Reference categories for Education and Employment status were 'no or don't know' and 'full-time' respectively.

N = 1622

** *p* < .01

* *p* < .05

Table 3.

Odds ratios and 95% confidence intervals for job relatedness and job qualification as a function of post-secondary program

	Job relatedness		Job qualification
	Closely	Somewhat	Overqualified
	Odds Ratio (CI)	Odds Ratio (CI)	Odds Ratio (CI)
Constant/Intercept	-1.48**	-1.16*	1.50**
Study variables			
Post-secondary program			
Education	4.63** (2.36–9.08)	1.67 (0.66–4.22)	0.50* (0.28–0.91)
Social Science	1.50* (1.00–2.25)	1.66* (1.04–2.64)	1.03 (0.70–1.51)
Business	2.01** (1.21–3.34)	3.54** (2.10–5.96)	1.60 (0.96–2.66)
Science	2.11** (1.38–3.24)	1.74* (1.04–2.89)	0.62* (0.42–0.92)
Math & Computer Science	4.52** (2.62–7.80)	2.14* (1.07–4.27)	0.35** (0.22–0.57)
Engineering & Technology	5.47** (3.01–9.92)	2.92** (1.44–5.93)	0.84 (0.49–1.44)
Covariates			
Female respondent	1.35 (0.99–1.85)	1.10 (0.76–1.56)	0.67* (0.50–0.91)
Age (years)	1.01 (1.001.03)	0.99 (0.96–1.02)	1.00 (0.98–1.01)
Father's education \geq high school	1.06 (0.94–1.19)	1.06 (0.92–1.21)	0.96 (0.86–1.07)
Mother's education \geq high school	1.09 (0.97–1.23)	1.11 (0.97–1.27)	0.97 (0.86–1.08)
Attended co-op program	1.03 (0.62–1.71)	1.35 (0.78–2.34)	1.39 (0.86–2.26)
Married	1.91* (1.14–3.21)	1.45 (0.78–2.72)	0.51** (0.32–0.81)
Have dependent children	1.29 (0.60–2.77)	1.58 (0.64–3.91)	0.90 (0.46–1.78)

Note. Reference categories for job relatedness and job qualification were "not at all related" and "appropriately qualified" respectively.

N = 1108

** *p* < .01.

* *p* < .05.

Discussion

Examining the differential impact of postsecondary programs on graduate employment is a vital topic of concern. Popular media and empirical research both criticize the ability of humanities programs to provide graduates with related employment (Barrow, 2011; Hoolihan, 2011; Lacey & Crosby, 2005; Richards, 1984; Robst, 2007; Sharp, 1970; Sharp & Weidman, 1986). Our study extends previous findings to a cross-national Canadian context, and highlights not only the impact of postsecondary programs on job relatedness but also demonstrates the impact of postsecondary programs on job qualification, employment status, and plans to pursue higher education.

Graduates from humanities are at a significant disadvantage in the labour market compared to graduates from education, social science, business, science, math and computer science, and engineering and technology. Results from the current study demonstrate that job relatedness is the only outcome for which graduates from humanities underperform relative to graduates from all other programs. Consistent with these results, existing literature has demonstrated the relation between over-qualification and programs of study; however, it is important for future research to focus on exploring the relation between fields within humanities and related occupations. Regarding employment status, graduates from science, and engineering and technology programs are less likely to be employed part-time (compared to full-time) relative to graduates from humanities. These results are not surprising, because science, and engineering and technology graduates are typically employed in positions that require full-time work commitments (e.g., machine design, lab support, medical assistance, clinical research coordination) (Science Buddies, 2012). Additionally, humanities graduates are at a greater risk for unemployment (humanities 35%, other programs < 17%), and comprise a greater percentage of graduates enrolled in courses after graduation (humanities 25%, other programs < 18%). However, the analyses surrounding the issue of unemployment were unclear because the unemployment category included respondents who were unemployed and enrolled in courses and those not enrolled in courses. Future research should disentangle course enrolment from unemployment and independently examine the impact of program on unemployment outcomes.

In line with higher postgraduation course enrolment rates, graduates from humanities are also more likely to plan on pursuing higher education (master's or Ph.D.). Previous research supports these results by demonstrating that increased uncertainty concerning future income leads to increased demand for additional training and higher education (Kodde, 1986). It would be informative if future research addressed the employment outcomes of graduates from humanities and nonhumanities programs after completion of master's or Ph.D. degrees.

It is important to note that our findings replicate previous research and support our predictions, which argue that humanities programs provide generic skills that are more likely to produce unrelated and overqualified employment than other programs. These results are consistent with studies conducted on more limited samples in Canada and the US (i.e., single universities, provinces, cities) (Chinaldo, 2010; Richards, 1984; Robst, 2007), as well as within European and Asian jurisdictions (e.g., Germany, Spain, Taiwan) (Bauer, 2000; Hartog, 2000; Huang, 2007). Interestingly, most researchers and academics acknowledge that humanities graduates experience significantly greater gains in critical thinking, complex reasoning, and communication skills compared to graduates from other programs (Akrum & Roksa, 2011). Humanities graduates are exposed to a breadth and depth of historical issues in politics, culture, and economics, allowing them to make more informed decisions on current societal and political issues. Although our study demonstrates that humanities graduates are more likely to have employment difficulties two years after graduation, it is important to acknowledge that the likelihood of finding related employment and earning higher wages is expected to increase with age (Sullivan, 1978). Previous research has demonstrated a positive trend between educational program and job relatedness as a function of increased age (Richards, 1984). However,

it is still critical to address the impact of postsecondary programs on related employment for recent graduates (M age = 25 years), because they constitute a significant portion of the current workforce at risk for unemployment (Carnevale, Cheah & Strohl, 2012).

Our results reinforce the claim that certain postsecondary programs are better than others. Humanities programs are clearly less able to facilitate goals of finding related and appropriately qualified employment. The recurring issue of humanities graduates experiencing poor employment outcomes is raising concerns since enrolment rates in humanities programs is one of the highest out of all university programs (Lacey & Crosby, 2005; Richards, 1984; Robst, 2007; Sharp, 1970; Sharp & Weidman, 1986). There is some evidence to suggest that enrolment qualifications for a science program are more difficult than for a humanities program (Montmarquette, Cannings & Mahseredjian, 2001). But even if we assume that some students entering humanities sacrifice their economic return (in terms of both wages and related employment) in order to enrol at a university, it does not explain why enrolment in humanities is greater than enrolment in social sciences; both programs have similar admission requirements, but the social science programs offer skills that are marketable for employment. It may not be that students are choosing humanities as a default or a perception that humanities are “easy” programs, but because they have a misperception of the program objective.

The high enrolment rates in humanities programs, despite poor employment outcomes, may indicate that university-bound students are misinformed of the value of humanities programs in facilitating related postgraduation employment. They may also be unaware of the reduced likelihood of finding related employment with a humanities-based degree. Most empirical findings suggest that students select postsecondary programs with the intention of applying newly gained skills and knowledge to related postgraduation employment (Betts, 1996; Robst, 2007). It is therefore unlikely that humanities graduates are aware that they need to seek additional education or training to obtain related employment.

Future survey designs should directly assess graduates’ perceptions of postsecondary program usefulness in terms of occupational outcomes. A survey question such as, “Did you select your postsecondary program because you wanted a job in a related field?” would help highlight whether graduates believe they will be gaining skills and knowledge applicable to specific occupations. It is crucial that both high school and university representatives provide reliable information on the employment opportunities associated with various programs to ensure students are aware of their postgraduation opportunities.

Strengths and Limitations

A significant strength of our study was its use of a Canada-wide dataset, which means our findings can be generalized across Canadian universities. An important limitation is the sole reliance on subjective response measures to assess job relatedness and job qualification. It would be useful for future surveys to have a predefined job-fit index that objectively categorized relatedness and qualification standards between jobs and programs. It would also be useful if future work used actual postgraduation activities rather than planned activities. Unfortunately, we were limited in the variables we could use to measure actual versus intended activities, so we had to rely on indicators of planned activities. In addition, it is important to examine the long-term impact of postsecondary programs on job relatedness and qualification since relatedness and earnings may increase with

age. Statistics Canada administered a National Graduate Survey follow-up in 2010. In a future study, we hope to explore whether job relatedness and job qualification has improved for humanities graduates compared to nonhumanities graduates, or whether the observed employment differentials exists two and five years after graduation.

Overall, this study provides a comprehensive analysis of the employment outcomes of recent graduates across Canada. It also sets the stage for future research to examine the long-term relationships between postsecondary programs and critical employment outcomes such as job relatedness and job qualification. Both parents and students invest a lot of money, time, and hard work into postsecondary education, and they deserve comprehensive information about the ability of various programs to provide knowledge and skills that are in economic demand. We believe that our findings bring students one step closer to making successful investments in their education. 

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References

Akrum, R., & Roksa, J. (2011). *Academically adrift: Limited learning on college campuses*. Chicago: University of Chicago Press.

Allen, R. C. (1998). *The employability of university graduates in the humanities, social sciences, and education: Recent statistical evidence*. Discussion paper 98-15, Vancouver, BC: Department of Economics, University of British Columbia. Retreived from <http://economics.ouls.ox.ac.uk/12102/1/dp9815.pdf>

Barrow, B. (2011, August 17). Bosses condemn 'useless' degrees which leave graduates unemployable because they lack basic skills. *[UK Daily] Mail Online*. Retrieved from <http://www.dailymail.co.uk/news/article-2026858/Bosses-condemn-useless-degrees-leave-graduates-lacking-basic-skills.html>

Baruch, Y. (1999). Response rate in academic studies-A comparative analysis. *Human relations*, 52(4), 421-438.

Bauer, T. K. (2000). Educational mismatch and wages: A panel analysis. *Economics of Education Review*, 21(3), 221-229. doi:10.1016/S0272-7757(01)00004-8

Betts, J. R. (1996). What do students know about wages? Evidence from a survey of undergraduates. *Journal of Human Resources*, 31(1), 27-56. Retrieved from <http://www.jstor.org/stable/146042>

Boudarbat, B., & Chernoff, V. (2009). *The determinants of education-job match among Canadian university graduates*. Discussion paper 4513, Bonn, Germany: Institute for the Study of Labour.

Bowlby, J. W., & McMullen, K. (2002). *At a crossroads: First results for the 18–20-year-old cohort of the youth in transition survey*. Human Resources Development Canada, Statistics Canada. (Catalogue number 81-591-XIE). Retrieved from <http://www.statcan.gc.ca/pub/81-591-x/81-591-x2000001-eng.pdf>

Carnevale, A. P., Cheah, B., & Strohl, J. (2012). *Hard times: college majors, unemployment and earnings: not all college degrees are created equal*. Washington, DC: Georgetown University Center on Education and the Workforce. Retrieved from https://cew.georgetown.edu/wp-content/uploads/2014/11/Unemployment.Final_.update1.pdf

Chindalo, P. (2010). *How Undergraduate Students Think About Higher Education and Prepare For Employment* (Doctoral dissertation, University of Toronto).

Frenette, M. (2000). Over-qualified? Recent graduates and the needs of their employers. *Education Quarterly Review*, 7(1), 6–20.

Giles, P., & Drewes, T. (2001). Liberal arts degrees and the labour market. *Perspectives on Labour and Income*, 2(7), 12–18. (Catalogue number 75-001-XIE) Retrieved from <http://www.statcan.gc.ca/pub/75-001-x/75-001-x2001007-eng.pdf>

Garcia-Espejo, I., & Ibanez, M. (2006). Education-skill matches and labour achievements among graduates in Spain, *European Sociological Review*, 22(2), 141–155.

Hartog, J. (2000). Over-education and earnings: where are we, where should we go? *Economics of Education Review*, 19, 131–147. doi:10.1016/S0272-7757(99)00050-3

Hoolihan, J. (2011). *The 20 most useless degrees*. Retrieved from <http://www.thedailybeast.com/galleries/2011/04/27/20-most-useless-degrees.html#slide1>

Huang, Y. (2007). Relatedness between jobs and academic majors: its relationship to academic involvement of college students. *International Journal for Educational and Vocational Guidance*, 7(2), 111–122. doi:10.1007/s10775-007-9119-3

King, A. J. C., Warren, W. K., Boyer, J. C., & Chin, P. (2002). *Double cohort study* (Phase 2 report). Toronto, ON: Ontario Ministry of Education and Training.

Kodde, D. A. (1986). Uncertainty and the demand for education. *Review of Economics and Statistics*, 68(3), 460–467. Retrieved from <http://www.jstor.org/stable/1926023>

Krahn, H., & Bowlby, J. (1999). *Education job-skills match: An analysis of the 1990 and 1995 National Graduates Surveys*. (Research paper R-00-1-1E) Ottawa, ON: Human Resources Development Canada, Applied Research Branch for Strategic Policy.

Lacey, J. N., & Crosby, O. (2005). Job outlook for college graduates. *Occupational Outlook Quarterly*, 48(4), 15–27.

Montmarquette, C., Cannings, K., & Mahseredjian, S. (2001). How do young people choose college majors? *Economics of Education Review*, 21(6), 543–556. doi:10.1016/S0272-7757(01)00054-1

Richards, E. W. (1984). Undergraduate preparation and early career outcomes: A study of recent college graduates. *Journal of Vocational Behaviour*, 24, 279–304. doi:10.1016/0001-8791(84)90013-7

Robst, J. (2007). Education and job match: the relatedness of college major and work. *Economics of Education Review*, 26, 397-407. doi:10.1016/j.econedurev.2006.08.003

Science Buddies. Careers in Science. (2012). *Explore Careers in Earth and Physical Science*. Retrieved from http://www.sciencebuddies.org/science-fair-projects/science_careers.shtml?gclid=CLG19sG5v68CFY0BQAodyE2ozQ

Sharp, L. M. (1970). *Education and employment: The early careers of college graduates*. Baltimore, MD: Johns Hopkins Press.

Sharp, L. M., & Weidman, J. C. (1986). *Early career patterns of undergraduate majors in the humanities*. Retrieved from ERIC database. (ED274 258)

Storen, L. A., & Arnesen, C. A. (2006). *What promotes a successful utilization of competence in the labour market five years after graduation? Does vocational higher education result in a better match than academic generalist education?* Paper presented at the European Research Network on Transition in Youth Workshop, Marseilles, France.

Study.com (2014). *25 great jobs for Humanities majors*. Retrieved from http://study.com/articles/25_Great_Jobs_for_Humanities_Majors.html

Sullivan, T. A. (1978). *Marginal workers, marginal jobs. The underutilization of American workers*. Austin, TX: University of Texas Press.

U. S. Bureau of Labour Statistics (1977). *Occupational outlook for college graduates*. Washington, DC: U.S. Govt. Printing Office.

U. S. Census Bureau. (2002). *The big payoff: Educational attainment and synthetic estimates of work-life earnings*. Retrieved from <http://www.census.gov/prod/2002pubs/p23-210.pdf>

Walters, D. (2004). The relationship between postsecondary education and skill: Comparing credentialism with Human Capital Theory. *The Canadian Journal of Higher Education*, 34(2), 97–124.

Witte, J. C., & Kalleberg, A. L. (1995). Matching training and jobs: The fit between vocational education and employment in the German labour market. *European Sociological Review*, 11(3), 293–317.

Wolbers, M. H. J. (2003). Job mismatches and their labour-market effects among school-leavers in Europe. *European Sociological Review*, 19(3), 249–266.

Yuen, J. (2010). *Job-education match and mismatch: Wage differentials: Survey of Labour and Income Dynamics, 2006*. Statistics Canada. (Catalogue number 75-001-X). Retrieved from <http://www.statcan.gc.ca/pub/75-001-x/2010104/article/11149-eng.htm#data>

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